

37 C.F.R. § 1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 19-0036.

Amendments

In the Claims:

Please cancel claims 15-82 without prejudice or disclaimer.

Please add the following new claims.

83. (New) A method of using a nucleic acid marker ladder to estimate the mass of a nucleic acid comprising:

(a) electrophoresing a known amount of a marker ladder and an unknown amount of said nucleic acid on an agarose gel; and

(b) comparing the staining intensity of said marker ladder with the staining intensity of said nucleic acid wherein the staining intensity of said marker ladder and said nucleic acid is a function of nucleic acid mass, and wherein said marker ladder comprises at least 3 nucleic acid fragments, wherein the size of each of said fragments in base pairs is approximately a multiple of an integer.

84. (New) The method of claim 83, wherein in (b) said ladder and said nucleic acid are stained with ethidium bromide.

85. (New) A nucleic acid marker ladder for determining the approximate mass of a nucleic acid in a sample, said ladder comprising at least 3 nucleic acid fragments, wherein said size of said at least 3 nucleic acid fragments is 100, 200 and 300 base pairs.

86. (New) A nucleic acid marker ladder for determining the approximate mass of a nucleic acid in a sample, said ladder comprising at least 3 nucleic acid fragments, wherein said size of said at least 3 nucleic acid fragments is 500, 1000 and 2000 base pairs.

87. (New) A nucleic acid marker ladder comprising:

- (a) at least 3 nucleic acid fragments resulting from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and
- (b) wherein said size of said at least 3 nucleic acid fragments is 100, 200 and 300 base pairs.

88. (New) A nucleic acid marker ladder comprising:

- (c) at least 3 nucleic acid fragments resulting from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and
- (d) wherein said size of said at least 3 nucleic acid fragments is 500, 1000 and 2000 base pairs.

89. (New) The nucleic acid marker ladder of claim 87 or 88, wherein said ladder is stained with ethidium bromide.

90. (New) A nucleic acid marker kit comprising a carrier having in close confinement therein at least one container wherein one container comprises a nucleic acid marker ladder comprising at least 3 nucleic acid fragments, and wherein

- (a) said at least 3 nucleic acid fragments result from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and
- (b) wherein said size of said at least 3 nucleic acid fragments is 100, 200 and 300 base pairs.

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91. (New) A nucleic acid marker kit comprising a carrier having in close confinement therein at least one container wherein one container comprises a nucleic acid marker ladder comprising at least 3 nucleic acid fragments, and wherein

- (c) said at least 3 nucleic acid fragments result from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and
- (d) wherein said size of said at least 3 nucleic acid fragments is 500, 1000 and 2000 base pairs.

92. (New) A nucleic acid marker ladder for determining the approximate mass of a nucleic acid in a sample comprising:

- (a) at least 3 nucleic acid fragments resulting from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and
- (b) wherein said size of said at least 3 nucleic acid fragments is 100, 200 and 300 base pairs.

93. (New) A nucleic acid marker ladder for determining the approximate mass of a nucleic acid in a sample comprising:

- (a) at least 3 nucleic acid fragments resulting from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and
- (b) wherein said size of said at least 3 nucleic acid fragments is 500, 1000 and 2000 base pairs.

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94. (New) The nucleic acid marker ladder of claim 92 or 93, wherein said ladder is stained with ethidium bromide.

95. (New) A nucleic acid marker ladder comprising:

- (a) at least 3 nucleic acid fragments resulting from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and
- (b) wherein said size of said at least 3 nucleic acid fragments is 100, 200 and 300 base pairs.

96. (New) A nucleic acid marker ladder comprising:

- (c) at least 3 nucleic acid fragments resulting from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and
- (d) wherein said size of said at least 3 nucleic acid fragments is 500, 1000 and 2000 base pairs.

97. (New) The nucleic acid marker ladder of claim 95 or 96, wherein said ladder is stained with ethidium bromide.

98. (New) A nucleic acid marker ladder for determining the approximate mass of a nucleic acid in a sample, said ladder comprising at least 3 nucleic acid fragments, wherein said size of said at least 3 nucleic acid fragments is 100, 200 and 300 base pairs.

99. (New) A nucleic acid marker ladder for determining the approximate mass of a nucleic acid in a sample, said ladder comprising at least 3 nucleic acid fragments, wherein said size of said at least 3 nucleic acid fragments is 500, 1000 and 2000 base pairs.

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100. (New) The nucleic acid marker ladder of claim 98 or 99, wherein said ladder is stained with ethidium bromide.

101. (New) A nucleic acid marker ladder for determining the approximate mass of a nucleic acid in a sample, said ladder comprising a 100 bp nucleic acid fragment, a 200 bp nucleic acid fragment, and a 300 bp nucleic acid fragment, wherein said ladder is stained with ethidium bromide.

102. (New) A nucleic acid marker ladder for determining the approximate mass of a nucleic acid in a sample, said ladder comprising a 500 bp nucleic acid fragment, a 1000 bp nucleic acid fragment, and a 2000 bp nucleic acid fragment, wherein said ladder is stained with ethidium bromide.

103. (New) A nucleic acid marker ladder comprising:

- (a) at least 3 nucleic acid fragments resulting from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and

(b) the size of said at least 3 nucleic acid fragments is 100 base pairs, 200 base pairs, and 300 base pairs,
wherein said ladder is stained with ethidium bromide.

104. (New) A nucleic acid marker ladder comprising:

(a) at least 3 nucleic acid fragments resulting from a complete digestion of one or more nucleic acid molecules with one or more restriction endonucleases; and
(b) the size of said at least 3 nucleic acid fragments is 500 base pairs, 1000 base pairs, and 2000 base pairs,

wherein said ladder is stained with ethidium bromide.

105. (New) A method of preparing a nucleic acid marker ladder comprising:

(a) generating at least two polymerase chain reaction (PCR) products wherein each product is generated from a template comprising a restriction endonuclease site and a primer comprising the restriction endonuclease site in the template;
(b) joining the PCR products to produce a nucleic acid molecule; and
(c) completely digesting one or more nucleic acid molecules with at least one restriction endonuclease;

wherein a nucleic acid marker ladder is produced which comprises at least 3 nucleic acid fragments, wherein the size of each of said at least 3 nucleic acid fragments in base pairs is approximately a multiple of an integer with respect to at least one of said at least 3 nucleic acid fragments.

106. (New) The method according to claim 105, wherein said fragments are generated simultaneously in one reaction in (c).